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DRAFT FOR COMMENT

FISHERY DEVELOPMENT IN THE CENTRAL AND WESTERN PACIFIC ISLANDS OF U.S. CONCERN

By

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Presently a number of organizations and agencies are engaged in various aspects of fishery development in the central and western Pacific. For those areas of U.S. concern, fishery development has assumed a new stature resulting from the passage of the Fishery Management and Conservation Act of 1976. The Act was directed towards optimum utilization of the marine resources within the 200-mile zone and the basic consideration was the desire to improve and enhance domestic fishing capabilities. Since resources that are not being fully utilized at an optimal level will be made available for harvesting by foreign fishing fleets, it is incumbent upon the U.S. domestic fishing industry to develop its own fisheries to its fullest extent.

The present report provides a brief review of ongoing fishery development activities in the central and western Pacific and some thoughts on areas of fishery development activities that should be considered for future support. The geographical areas covered in this report are those areas of direct concern to the U.S. and includes the Hawaiian Archipelago, American Samoa, Guam, and Northern Marianas, and the Trust Territory of the Pacific Islands.

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FISHERY DEVELOPMENT - DEFINITION

For purposes of this report the term "fishery development" is defined as an activity which encompasses a wide range of research and development areas, all directed toward the utilization of a resource. The kinds of research and development specifics in fishery development include:

1. Assessment of resource

For those fisheries already in existence, the assessment would include evaluation of whether a resource base is capable of expanded production. For new resources the assessment and evaluation of the resource base should provide insights on whether the fishery should be directed toward commercial or recreational use, and define the full spectrum of economic benefits.

2. Harvesting

This category includes gear development, gear improvement, and fishing strategy. It also includes research directed toward specific biological problems, e.g., eliminating dependence on wild stocks for fry by developing induced spawning of a species under controlled conditions.

3. Processing

This category includes new product development, and improving existing processing technology.

4. Marketing

This category includes the wide spectrum of marketing.

The review of fishery development activities in the central and western Pacific area will be described in this report by area rather than general subject categories. Areas to be discussed include Hawaii, American Samoa, Guam, and Northern Marianas, and the Trust Territory of the Pacific Islands. For the resource categories, the breakdown is as follows:

1. Aquaculture
2. Inshore (lagoon and reef)
3. Slopes and banks
4. Pelagic

HAWAII

As shown in Figure 1 the Hawaiian Archipelago extends over a wide expanse of the central North Pacific area. The southeastern segment of the Archipelago consists of high volcanic islands which are inhabited. In general the reef areas and banks are not extensive. The fish fauna is typically Indo-Pacific and consist of approximately 680 species. Generally the abundance of any single species in the area is not considered to be very large. One exception is the skipjack tuna, Katsuwonus pelamis. The reported total annual catch of marine fishes in the State of Hawaii exclusive of tunas has averaged around 1,500 to 2,000 metric tons (MT). The skipjack tuna landings show a wide fluctuation from year to year, (roughly 3,000 to 8,000 tons);

the annual average is in the neighborhood of 4,500 tons. The ex-vessel value of all marine fish catches during the 1965-75 period ranged from $2.5 million to $5.2 million.

The northwestern half of the Hawaiian Archipelago consists of a few volcanic islands and series of low-lying atolls which extend northwest to Kure Island. Except for about 1,500 military personnel based on Midway Islands and 20 to 30 Coast Guard personnel stationed on French Frigate Shoals and Kure Island, the other islands and atolls of the Northwestern Hawaiian Islands are uninhabited. Also, except for Kure Island, the other islands of the Northwestern Hawaiian Islands are part of the Hawaiian Islands National Wildlife Refuge. With regard to fisheries, much of the slope and bank areas have not been fished heavily, if at all. An exception is the fishery on the Hancock Bank. Japanese and Soviet trawlers have fished the seamount resources of the Hawaiian Archipelago for the past decade. Presently the Honolulu Laboratory is engaged in a joint cooperative study to survey and assess the marine resources of the Northwestern Hawaiian Islands. Based on preliminary results it appears likely that a small fishery can be developed for lobsters and bottom fishes of the snapper and grouper type. Additionally, the kawakawa, Euthynnus affinis, resource appears to be large enough to support a small tuna fishery.

ONGOING FISHERY DEVELOPMENT ACTIVITIES

Table 1 summarizes the ongoing fishery activities in the State of Hawaii.

A brief review follows:

Aquaculture

The field of aquaculture is given very high priority in the State of Hawaii. The State Fish and Game Division devotes a major part of its aquaculture work toward developing a culture fishery for prawns, Macrobrachium rosenbergii. Other State aquaculture activities include (1) hatching eyed rainbow trout eggs obtained from mainland sources for a small recreational fishery on the island of Kauai, (2) hatching catfish for a recreational fishery based in the water reservoir system on Oahu. The University of Hawaii Sea Grant Program is actively working on various aspects of Macrobrachium prawns, e.g., genetics, and developing a suitable harvesting system, and (3) research to develop an algae industry in Hawaii. Finally, industry is directly involved in developing a culture fishery for catfish on the island of Maui, and oysters and Macrobrachium prawns on Oahu.

Inshore

The level of activity in this area is low and is confined to research of reef fishes.

Slopes and banks

The National Marine Fisheries Service (Honolulu Laboratory) is working on a development of spiny lobster fishery in the Northwestern

Hawaiian Islands. Also, exploratory work suggests that the finfish resource on the slopes and banks of the Northwestern Hawaiian Islands may be sufficiently large to support a small domestic fishery.

Pelagic

Activity is considered to be high in this area. Presently the Honolulu Laboratory is engaged in a cooperative undertaking with Pacific Islands Development Corporation to determine the effectiveness of anchored rafts to aggregate tunas. The Laboratory is also doing some work on stock assessment and economic research of the fishery for billfishes. Finally, the Laboratory is working on the problem of burnt tuna which is encountered by the handline fishery based on the island of Hawaii.

NEW FISHERY DEVELOPMENT PROJECTS

The following provides a preliminary list of fishery development projects that could be considered for support in forthcoming years. It should be noted that this list is not complete and is almost totally lacking in the identification of processing and marketing projects.

Aquaculture

1. Induced spawning of catfish. While this project relates to a fresh water resource, it is a problem that needs attention by some agency. A commercial industry for culturing catfish exists on the island of Maui. It has encountered a major stumbling block by not having access to a ready supply of fry. It is presently necessary

to buy fingerlings from the mainland. Efforts to date of inducing spawning of catfish in Hawaii have not been successful. The expertise in this area is lacking. Priority - high.

2. Development of a fishery for tropical aquarium fishes. Details of this project have been identified in a TDP submitted by the Honolulu Laboratory. Priority - high.

Inshore

1. Development of permanent artificial reef structures to enhance recreational fishing and possibly commercial fishing. Prior to embarking on a project of this nature, a detailed preliminary study should be undertaken to determine the need for artificial reefs. Priority - medium.

Slopes

1. Expand the handline fishery for tunas by exploring other areas in the Hawaiian Islands chain. Presently the fishery is confined to the island of Hawaii; however, there is no reason to suspect that other areas in the chain cannot be located which are suitable for this type of a fishery. Priority - high.

2. Ciguatoxin monitoring of locally-caught fishes. The University of Hawaii recently developed a rapid method to determine the level of ciguatoxin in fresh fish. While the ciguatoxin problem is not severe or critical in Hawaii, it would be desirable to monitor those species suspected to have high levels of ciguatoxin. Priority - medium.

Pelagic

1. Explore the Northwestern Hawaiian Islands for deepwater baitfish resources. Should a deepwater baitfish resource be located, the possibility of extending the Hawaiian pole-and-line fishery into the Northwestern Hawaiian Islands will be enhanced. Priority - high.

2. Develop a fishery for kawakawa in the Northwestern Hawaiian Islands. Recent observations from cruises into the Northwestern Hawaiian Islands suggest that the kawakawa resource in the Northwestern Hawaiian Islands may be large enough to support a small fishery. The project would entail using a commercial vessel to determine if commercial-size catches of kawakawa can be made.

AMERICAN SAMOA

The research and development activities that could be identified as fishery development for American Samoa are summarized in Table 2. As noted in the table, there is only a little effort in fishery development work going on in American Samoa today.

ONGOING FISHERY DEVELOPMENT ACTIVITIES

The following provides a summary of ongoing fishery development activities in American Samoa.

Aquaculture

This activity has been considered high and is confined to baitfish culture. As noted in Table 1, the Government of American Samoa (with support from NMFS via 88-309 funds), Sea Grant (University of Hawaii Sea Grant Program), and PTDF are working jointly to culture a sufficient supply of mollies to be used as baitfish for pole-and-line fishing of skipjack tuna in American Samoa. Basically the plan is to test the mollies as a suitable baitfish for catching skipjack tuna. Should the field trial succeed, efforts will be made to determine the suitability of developing a pole-and-line fishery in American Samoa based on the use of cultured baitfish.

Inshore

The immediate nearshore fishery resources in American Samoa are probably being harvested at a maximum level by the people of American Samoa. There is no fishery development activity in this area.

Slopes and banks

While the level of activity is rated high, this is a relative judgment. Much of the development efforts of the Government of American Samoa has been directed towards the dory fishery. No major effort has been provided recently to enhance the development of this fishery.

Pelagic

There is virtually no ongoing activity in the pelagic area of fishery development. There are, however, plans to move actively in this area.

NEW FISHERY DEVELOPMENT PROJECTS

The following provides a list of possible projects to be undertaken in American Samoa:

Aquaculture

Until the mollie field test is completed, no further projects in aquaculture are recommended.

Inshore

There may be a possibility to undertake a reef enhancement program in inshore waters of American Samoa. Whether some barren areas can be enhanced by artificial reefs needs to be explored further.

Slopes and banks

1. Improve the dory fishery by introducing the use of hydraulic reel systems in this fishery. Priority - high.

2. Explore the nearby banks and slopes of American Samoa for spiny lobster resources. Priority - high.

3. Conduct a ciguatoxin monitoring program utilizing the system developed by the University of Hawaii. This would be an extremely valuable project, since nearly one-half of the present catch made by the dory fishery is being discarded due to potential ciguatoxin problems. Priority - high.

Pelagic

1. Survey the deep waters of American Samoa for deepwater baitfish resources. Priority - high.

2. Develop a total systems approach to the development of a recreational fishery for billfishes and other pelagic species. Priority - high.

3. Develop a commercial and recreational fishery based around anchored aggregating devices. Priority - high.

GUAM AND NORTHERN MARIANAS

While Guam and the Northern Marianas are politically separate, for convenience, the two entities are considered collectively in this section. A summary of ongoing fishery development activities in the Guam and Northern Marianas areas is provided in Table 3.

Aquaculture

Presently a private firm is in the early stages of developing an eel, Anguille sp., industry on Guam. It has been reported that the financial backing comes from Taiwan. Not much else is known about the present status of this industry.

Inshore

There are no specific details available on the fishery development activities dealing with the inshore resources. Presumably effort is nil for the present.

Slopes and banks

Recent reports indicate that a private Japanese fishing company presently has an arrangement with some elements of the Northern Marianas government to conduct a survey of the bottom fish resources of the slopes and banks of the Northern Marianas. Presumably the development of a fishery would be for export to Japan.

Pelagic

Presently PTDF has a chartered purse seiner operating in the western Pacific. The vessel is operating out of Guam and recently offloaded a catch of about 600 tons of skipjack and yellowfin tunas.

NEW FISHERIES DEVELOPMENT PROJECTS

The following provides a list of potential projects:

Aquaculture

No projects proposed in the field of aquaculture.

Inshore

No projects proposed for inshore resources.

Slopes and banks

1. Develop a small multi-purpose vessel fishery for finfish resources located on the slopes and banks areas. Priority - high.

2. Explore the slopes and banks for spiny lobster resources. Priority - high.

Pelagic

1. Explore the feasibility of developing a skipjack fishery in the Northern Marianas. This would entail examining all of the aspects associated with developing a tuna fishery. Priority - high.

2. Explore the feasibility of expanding the recreational fishery in Guam into a major industry. Priority - high.

TRUST TERRITORY OF THE PACIFIC ISLANDS

Recognizing that the future political status of the Districts exclusive of the Northern Marianas has not been determined, I am including all of the Districts under the overall category of the Trust Territory for this section. Table 4 provides a summary of the ongoing fishery development activities in the Trust Territory area.

Aquaculture

Presently all of the aquaculture activities in the Trust Territory are being carried out at the Mariculture Laboratory located in Palau. Based on various sources, the Laboratory is reported to be working on a number of culture projects. Included are projects on the culture of mollies for possible baitfish use in the skipjack tuna pole-and-line fishery, culture of rabbitfish, and culture of several species of shellfishes and crustaceans

Inshore

There are no ongoing fishery development activities directed towards reef fishes.

Slopes and banks

Based on several reports, small-scale fishing on the pelagic resources of coastal waters is underway in Truk and Ponape.

Pelagic

A recent report from Ponape indicated that one of the five vessels obtained by the Government of the Trust Territory of the Pacific Islands from Japan as part of the reparation agreement is being successfully used in Ponape for skipjack tuna fishing. The vessel is under charter to a private concern which is reported to have foreign capital involved. PTDF is supporting a project in Truk to develop a small-scale fishery using a small multiple-purpose vessel. The plan is to carry out handline fishing for nearshore species and troll fishing for tunas.

NEW PROJECTS FOR FISHERY DEVELOPMENT

The following provides a list of potential projects for support in the Trust Territory:

Aquaculture

Nothing is proposed for the present.

Inshore

Nothing is proposed for fishery development in this area.

Slopes and banks

1. Expand efforts to help develop small-scale fishing in various parts of the Trust Territory. Efforts should be made to examine this propect on total systems approach and not piecemeal fashion. Priority - high.

Pelagic

1. Survey the deeper waters for baitfish resources. Determine the stock size of existing inshore baitfish resources. Priority - high.

2. Should the tuna aggregation work presently being conducted in Hawaii prove to be successful, efforts should be made to test this system in the western Pacific. Priority - high.

Table 1.--On-going Fishery Development Activities. Hawaii.

Activity	Level of activity	Agency				
		NMFS	"State"	Sea Grant	PIDC/PTDF	Industry
Aquaculture	high					
Baitfishes				x		
Finfishes			x			x
Shellfish/crustaceans			x	x		x
Others (algae)				x		
Inshore	low					
Reef fishes			x	x		
Slopes and banks	high					
Finfishes		x				
Crustaceans		x				
Pelagic	high					
Baitfishes						
Tunas and billfishes		x			x	
Others						

Table 2.--On-going Fishery Development Activity. American Samoa

Activity	Level of activity	Agency				
		NMFS	"State"	Sea Grant	PIDC/PTDF	Industry
Aquaculture						
Baitfishes	high		x	x(UH)	x	
Finfishes						
Shellfish/crustaceans						
Others						
Inshore	low					
Reef fishes						
Slopes and banks	high					
Finfishes			x			
Crustaceans						
Pelagics	low					
Baitfishes						
Tunas and billfishes						
Others						

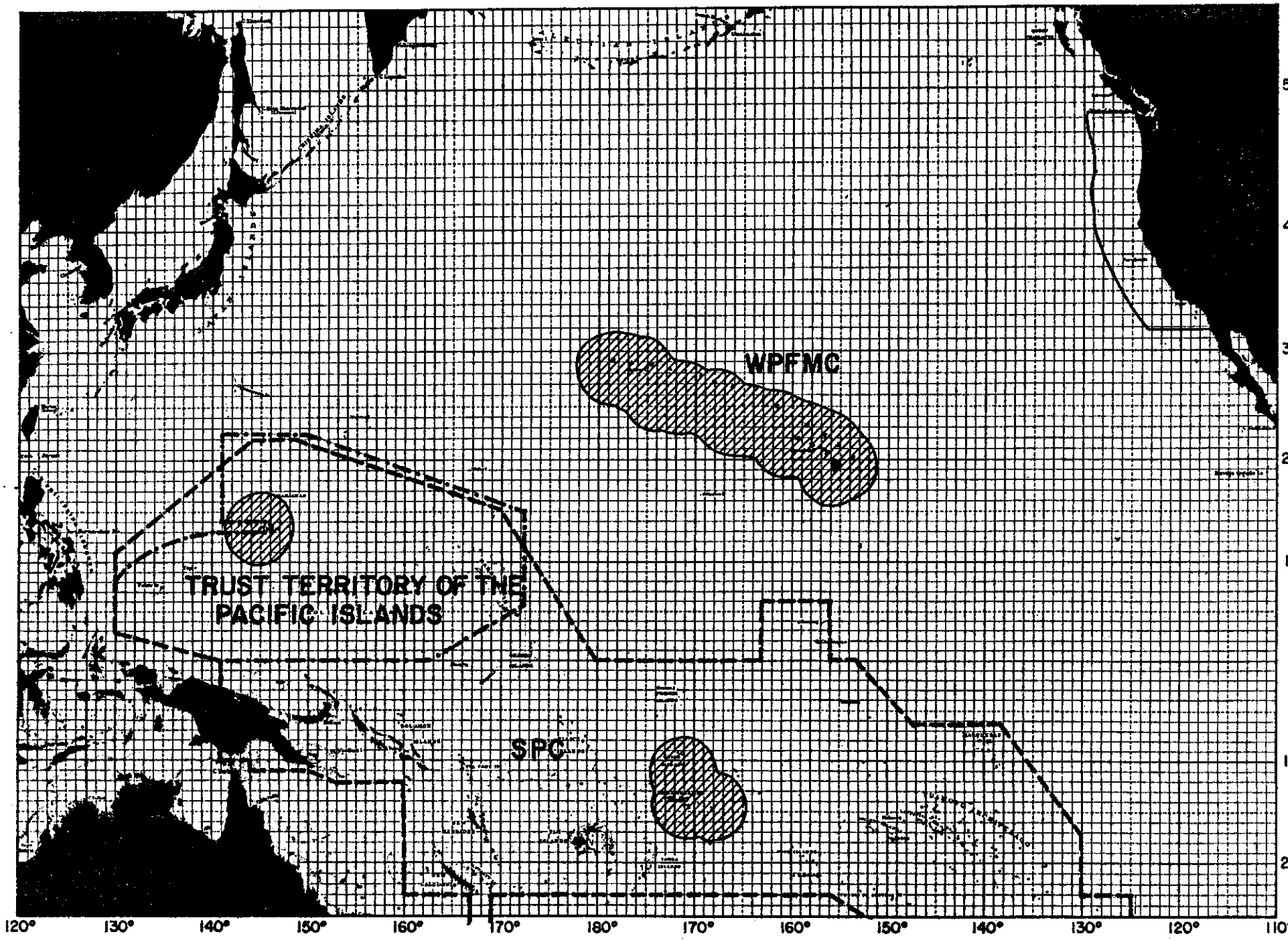
Table 3.--On-going Fishery Development Activities. Guam and Northern Marianas.

Activity	Level of activity	Agency				
		NMFS	"State"	Sea Grant	PIDC/PTDF	Industry
Aquaculture	high					
Baitfishes						
Finfishes						x
Shellfish/crustaceans						
Others						
Inshore	low					
Lagoons						
Reef fishes						
Slopes and banks	low					
Finfishes			x			
Crustaceans						
Pelagics	high					
Baitfishes						
Tunas and billfishes					x	
Others						

Table 4.--On-going Fishery Development Activities. Trust Territory.

Activity	Level of activity	Agency				
		NMFS	"State"	Sea Grant	PIDC/PTDF	Industry
Aquaculture	high					
Baitfishes			x (Palau)			
Finfishes			x (Palau)			
Shellfish/crustaceans			x (Palau)			
Others						
Inshore	low					
Baitfishes						
Slopes and banks	high					
Finfishes			x (Truk, Ponape)		x (Truk)	
Crustaceans						
Pelagics	high					
Baitfishes						
Tunas and billfishes			x (Ponape)		x (Truk)	
Others						

Figure 1.--Geographical areas encompassed by (a) Western Pacific Regional Fisheries Management Council (WPFMC), 1/ (b) Trust Territory of the Pacific Islands, and (c) South Pacific Commission.



1/ The shaded areas include the areas of overlapping jurisdiction between the USA and neighboring countries.